

**CLAIMS**

1        1.        A voltage regulator comprising:  
2              an input terminal at which an input voltage is applied;  
3              an output terminal at which an output voltage is provided to a load, wherein the  
4        load defines a load current;  
5              a gate modulated diode connected between the input terminal and the output  
6        terminal, the gate modulated diode having a forward voltage drop that is controllable by  
7        a voltage signal applied to a gate of the gate modulated diode;  
8              a first operational amplifier capable of operating with a low supply voltage, the  
9        first operational amplifier operable to apply the voltage signal at the gate of the gate  
10      modulated diode to control the forward voltage drop;  
11              wherein the output voltage is regulated to a predetermined low voltage when  
12      the load current is within an operational range for the voltage regulator.

1        2.        The voltage regulator of claim 1 wherein the supply voltage has a value  
2        of not more than 1.2V.

1        3.        The voltage regulator of claim 1 wherein the gate modulated diode  
2        comprises a MOSFET.

1        4.        The voltage regulator of claim 1 wherein the supply voltage is the same  
2        as the input voltage.

1        5.        The voltage regulator of claim 1 wherein the output voltage has a value  
2        of not more than 1.0V.

1        6.        The voltage regulator of claim 1 comprising a second operational  
2        amplifier operable to provide a reference voltage to the first operational amplifier.

1        7.        The voltage regulator of claim 1 comprising a resistor coupled between

2 the input terminal and an output node of the first operational amplifier, the resistor  
3 operable to pull-up the output node of the first operational amplifier.

1           8.       The voltage regulator of claim 1 comprising a capacitor connected to  
2 the output terminal, the capacitor operable to stabilize the output voltage.

1           9.       A voltage regulator comprising:  
2           an input terminal to which a low source voltage can be applied;  
3           an output terminal at which a low output voltage is provided;  
4           a transistor connected between the input terminal and the output terminal, the  
5           transistor having a forward voltage drop which can be changed in response to a voltage  
6           applied to a gate of the transistor; and  
7           means connected to the gate of the transistor for controlling the forward voltage  
8           drop of the transistor so that the low voltage output is maintained at a substantially  
9           constant value, the means for controlling capable of operating with the low source  
10          voltage.

1           10.      The voltage regulator of claim 9 wherein the low source voltage has a  
2 value of not more than 1.2V.

1           11.      The voltage regulator of claim 9 wherein the transistor implements a  
2 gate modulated diode.

1           12.      The voltage regulator of claim 9 wherein the transistor comprises a  
2 MOSFET.

1           13.      The voltage regulator of claim 9 wherein the output voltage has a value  
2 of not more than 1.0V.

1           14.      The voltage regulator of claim 9 wherein the means for controlling

2 comprises an operational amplifier.

1           15.     The voltage regulator of claim 9 comprising a capacitor connected to  
2 the output terminal, the capacitor operable to stabilize the output voltage.